Annex B: Overview of Asia-Pacific Reference Materials to facilitate Advanced Air Mobility Operations

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Contents

Important note

The content of this document remains the intellectual property of the contributing ICAO States and Administrations. Civil Aviation Authority NZ has not modified the content and is distributing these materials for industry feedback purposes only.

Overview

These Reference Materials guide States of Registry, States of the Operator, and States of the Aerodrome on the eight topics which regulators and industry have identified as priority areas to address for eVTOL aircraft and UAS.

Each of these topics are addressed as individual parts in the Reference Materials, and each part consists of five sections: (1) Introduction, providing a brief introduction for the content of the part; (2) Background, that sets the context of the topic with historical precedence or existing practices; (3) Key Considerations that are related to the topic which have been compiled through literature reviews, surveys, workshops, or brainstorming; (4) Action Plan, where the aim is to provide guidance to regulators on steps that may be taken in addressing and being prepared in the respective topic; and (5) References used in the development of the content. Where applicable, each part may be supported by annexes to guide the implementation of the part.

eVTOL Aircraft

For eVTOL aircraft, the Reference Materials will serve as a guide for CAAs in countries that are not States of Design[1] and cover various possible approaches to facilitate these aircraft for operations. The materials will benefit CAAs in developing their policy frameworks and approaches to regulate various types of eVTOL aircraft. The six focus parts for eVTOL aircraft are:

Certification, Validation, and Acceptance of eVTOL Aircraft: Several States of Design have received applications for eVTOL aircraft type certification, with some already certifying these aircraft. As eVTOL aircraft technology is novel and does not fall neatly into existing certification frameworks that apply for conventional aircraft, these States have had to develop new pathways for certification. This presents challenges for CAAs in States that facilitate eVTOL aircraft for operations as they may be unfamiliar with the new pathways adopted by the States of Design. This part outlines the key considerations behind the certification approaches for eVTOL aircraft, the different certification policy and practices, and provides guidance on how States can validate or accept these certifications.

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[1] **State of Design** refers to States that are responsible for approving the aircraft's design for certification.

Regulations for eVTOL Aircraft Entry into Service (EIS): Entry into service is a crucial regulatory process where the aircraft operator operating the aircraft is operationally certified, registered and approved for commercial operations by State. A structured EIS process is essential to support the safe and efficient commercial operation of eVTOL aircraft at scale. To facilitate the EIS, CAAs will need to develop appropriate regulations for operational and safety oversight. This part reviews existing EIS regulatory frameworks, highlighting key differences with conventional aircraft operations and addressing unique considerations for eVTOL aircraft operations. It also suggests action plans for creating new dedicated eVTOL aircraft regulations or adapting existing ones to facilitate these operations.

Cooperation Among National Agencies: eVTOL aircraft operations introduce new concepts, technologies, and business models that span the jurisdictions of multiple national agencies, including those responsible for security, urban planning, and emergency response. Clear definition of roles and effective cooperation are needed to avoid duplication or conflicts. This section identifies key areas and activities that require cooperation, outlines the varying roles of stakeholders, and provides methods to facilitate cooperation across agencies.

Economic Policies and Regulation: Economic policies and regulations play a key role in supporting market growth, healthy competition, and innovation, while also ensuring consumer interest is taken into consideration. This part explores topics such as market access and competition, as well as how economic policies and regulations may be used to encourage the development of commercial eVTOL aircraft operations for the benefit of consumers. It also provides guidance for CAAs and other national agencies on how to coordinate the development of economic policies and regulations for eVTOL aircraft operations.

Capacity Building: There is a need to build or enhance capabilities to develop policies and regulations for the safety oversight of eVTOL aircraft operations. This part explores the considerations for building both organisational and personnel capabilities, including how CAAs may need to review and adapt existing principles, procedures, and structures to manage the evolving technologies. It also offers guidance on developing personnel training programmes to address these needs.

Social Acceptance: Social acceptance is critical to enable commercial eVTOL aircraft operations to scale and develop into a viable market. Studies on public opinion have identified eight areas of concern that need to be addressed to build social acceptance. This part suggests strategic approaches to ensuring social acceptance, focusing on public participation, policy making, and measurement of public sentiment and impact. It also includes ready-to-use sample surveys, that CAAs may utilise to assess and engage the public.

UAS Operations

UAS are already deployed in a wide range of commercial applications, including infrastructure inspections, surveillance, delivery, and entertainment in most States. As technology advances, the demand for more complex operations has grown, and regulators face new challenges in managing these sophisticated drone applications. While these use cases unlock opportunities for greater operational efficiencies, productivity, and economic value, they also present higher risks and typically involve operating the UAS beyond visual line of sight (BVLOS). The Reference Materials highlight considerations for facilitating complex UAS operations and offer guidance to CAAs in building up their capability. The two focus areas for UAS are:

Technical Guidance for Managing Advanced Beyond Visual Line of Sight (BVLOS) UAS Operations:
This section provides guidance on managing advanced BVLOS UAS operations, drawing from global best practices. It covers UAS approval management methodologies and considerations for risk evaluation, and offers a stepwise approach to identifying and implementing new requirements for these advanced operations.

Capacity Building of CAA Personnel for UAS Operations:
The unique characteristics of UAS and the nature of their flight profiles require CAA personnel to deepen their knowledge of both the UAS and the operating environment. This section identifies common training gaps for existing CAA personnel (i.e. safety inspectors) and outlines how different UAS operations and technology affect the required knowledge and skills. It also provides guidance on developing and implementing training programmes for CAA personnel.